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(54) METHOD FOR EVALUATING MAGNETIC RECORDING MEDIUM

(57)Abstract:
PROBLEM TO BE SOLVED: To surely select a defective medium having the protrusions of not less than a standardized value in the floating characteristic evaluation of a magnetic recording medium by providing a PZT head and the band-pass filter of a specified frequency range.
SOLUTION: At the time of testing the floating characteristic of the magnetic recording medium, a signal is detected by using the PZT head having a PZT element and having a high detection sensitivity. Then, the detected output signal is outputted through the band-pass filter whose frequency range is from 100kHz to 1MHz and the defective medium is selected by the output value. Moreover, a measurement feeding pitch is made narrower than the half of the ABS width of the PZT head to make the selection of the defective medium surer.

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CLAIMS

[Claim(s)]
[Claim 1] The assessment approach of the magnetic-recording medium characterized by for a frequency range letting pass and outputting the output signal of the head to the band pass filter which is 1MHz from 100kHz on the occasion of the floatation characteristic test of a magnetic-recording medium using the head which has a PZT component in a trial, and sorting out a defect magnetic-recording medium with the output value.
[Claim 2] The assessment approach of the magnetic-recording medium characterized by making a measurement pitch narrower than the one half of the ABS width of face of a measuring head in the assessment approach of a magnetic-recording medium according to claim 1.

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DETAILED DESCRIPTION

[Detailed Description of the Invention]
[0001]
[Field of the Invention] This invention relates to the assessment approach of the magnetic-recording medium (below, it is called a medium for short) carried in a magnetic recording medium.
[0002]
[Description of the Prior Art] In the floatation characteristic test of a medium, the acoustic emission sensor used since before is replaced, and the measuring method which used the PZT head with more high detection sensitivity has been adopted by current. In this case, the frequency range of a band pass filter is 300-500kHz, and a measurement delivery pitch is about 70% of the ABS width of face of a measuring head.
[0003] The reason the frequency range of a band pass filter has been set to 300-500kHz is as follows. That is, the PZT head which has a slider 70% is used, and it is a low-frequency component 100kHz or less as a filter. (noise component) The high-pass filter to remove is used and it is floatation height 2.0. The signal when carrying out the Fourier transformation of the output signal wave of a PZT component when measuring a bump disk (height: 2.0 muin, diameter:250 mum) by muin and its wave is shown in drawing 2 . (A) is the output signal wave of a PZT component, and (B) is a frequency component when carrying out the Fourier transformation of the wave. The main peak of drawing 2 (B) is near 320kHz. In the large projection of size like a bump, the old measurement result shows that the frequency component near about 320kHz is a principal component of the signal. For this reason, in order to observe only the signal of the frequency component of this near conventionally, the frequency range of a band pass filter was set to 300-500kHz. In addition, although the large signal has appeared in 100kHz or less at drawing 2 , this is not based on resonance of a gimbal spring, and also when having not collided with a projection, it has always appeared as a signal.
[0004]
[Problem(s) to be Solved by the Invention] In connection with the densification of magnetic recording, low floatation-ization is called for more in the medium. The flying height of the medium by which current manufacture is carried out is 1.5-2.0. Although it is muin, it will be expected from now on that low floatation-ization progresses further. However, if such a low floatation medium is repeated and measured with the conventional test method, the case where the leakage in detection of the projection beyond a value of standard is generated will have come to be seen.
[0005] The technical problem of this invention is in the floatation characteristic test of a medium to establish the assessment approach which can sort out certainly the defect medium which has the projection beyond a value of standard.
[0006]
[Means for Solving the Problem] In order to solve this technical problem, in this invention, on the occasion of the floatation characteristic test of a medium, a signal is detected using the head which has a PZT component, a frequency range lets pass and outputs the output signal of that head to the band pass filter which is 1MHz from 100kHz, and that output value sorts out a defect medium.

[0007] Moreover, in order to make sorting of a defect medium still more reliable, the measurement pitch is made narrower than the one half of the ABS width of face of a measuring head. Having expanded the frequency range of a band pass filter from 100kHz to 1MHz and the conventional range is based on the result of having carried out the Fourier transformation of the output wave of the floatation characteristic test by the actual medium, and having examined it. That is, when this projection is applied to a floatation characteristic test, as that size of any projection is about several micrometers in diameter when the projection on a actual medium is observed with an optical microscope, and it is shown in drawing 3 and drawing 4 , it is that the frequency component with maximum amplitude appeared in 660kHz and 880kHz. This shows that a frequency component which is clearly different in the case of the bump who stated by the term of the conventional technique has appeared. In addition, in drawing 3 and drawing 4 , most signals of a frequency component 1MHz or more are not observed.
[0008] The above result and the frequency range of the conditions of removing the resonance frequency field of the gimbal spring of a head to a band pass filter were determined as 1MHz from 100kHz. In addition, in order to make sorting of a defect medium still more reliable, it is effective to examine the same location twice or more. Therefore, the measurement delivery pitch is made narrower than the one half of the ABS width of face of a measuring head.
[0009]
[Embodiment of the Invention] In this invention, on the occasion of the floatation characteristic test of a medium, a signal is detected using the head which has a PZT component, a frequency range lets pass and outputs the output signal of that head to the band pass filter which is 1MHz from 100kHz, and that output value sorts out a defect medium.
[0010] Moreover, in order to make sorting of a defect medium still more reliable, the measurement delivery pitch is made narrower than the one half of the ABS width of face of a measuring head.
[0011]
[Example] As an example of this invention, it is 3.5. It is the glide height of an inch magnetic-recording medium 1.5 In the floatation characteristic test set to muin ABS width of face Using the head of 11mil, the frequency range of a band pass filter is set to 300 to 500kHz, and it is a measurement delivery pitch 200 As opposed to the number of projections detected when referred to as mum having been one piece The frequency range of a band pass filter is set to 1MHz from 100kHz, and it is a measurement delivery pitch 125 When referred to as mum, the detected number of projections was five pieces. In addition, about four pieces, the signal of a frequency component (660kHz and 880kHz) is detected among those.
[0012] In addition, the output signal wave and frequency component at the time of changing the measurement truck of a head and measuring the same projection to drawing 1 , are shown. (A1) And (B1) it is a frequency component when carrying out the Fourier transformation of the output signal wave of the PZT component measured by first truck, and its wave, respectively, and (A2) (B-2) is a frequency component when carrying out the Fourier transformation of the output signal wave of the PZT component which changed and measured the truck, and its wave, respectively. By first truck, although the maximum peak is in 320kHz, the maximum peak has moved to 660kHz and 880kHz by changing a truck. Thus, since the frequency component of an output signal changes and the output of a band pass filter will become it small that it is the frequency range of the conventional band pass filter case [like a next truck] if a measurement truck changes even if it is the same projection, if there is a projection exceeding a value of standard will not be judged, and the leakage in sorting of a defect medium will be produced.
[0013]
[Effect of the Invention] According to this invention, as the term of an example explained, the defect medium by which the projection exceeding a value of standard exists can be sorted out certainly. Since a frequency component will change if a measurement truck changes especially in the projection of small area even if it is the same projection, sorting can be made more reliable by measuring the same location twice or more.

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DESCRIPTION OF DRAWINGS

[Brief Description of the Drawings]
[Drawing 1] The diagram showing the result of having changed the measurement truck and having measured the same projection exceeding the value of standard on a defect medium by this invention
(A1) The output signal wave of the PZT component in the first truck
(B1) The Fourier transformation result of an output signal wave in the first truck
(A2) The output signal wave of the PZT component in the changed truck
(B-2) Fourier transformation result of an output signal wave in the changed truck
[Drawing 2] The diagram showing the measurement result by Bengbu of a bump disk
(A) The output signal wave of a PZT component
(B) The Fourier transformation result of an output signal wave
[Drawing 3] The diagram showing the measurement result by the projection on a actual magnetic-recording medium
(A) The output signal wave of a PZT component
(B) The Fourier transformation result of an output signal wave
[Drawing 4] The diagram showing the measurement result by another projection on a actual magnetic-recording medium
(A) The output signal wave of a PZT component
(B) The Fourier transformation result of an output signal wave

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